authorities, including the state Structures, Dredging and Fill Act and Tidal Wetlands Act, Soil Erosion and Sediment Control Act, Inland Wetlands and Watercourses Act, state coastal management consistency review for state-sponsored projects affecting the coastal boundary, municipal coastal site plan review and other local planning and zoning authorities.

In keeping with §6217 requirements, Connecticut's CNPCP implementation strategy over the next 2-3 years will focus on high priority watersheds as identified by the state's Unified Watershed Assessment, and on the urban category of nonpoint source pollution as established by §6217. CT DEP and other state agencies will have direct responsibility for implementing the CNPCP's management measures and will develop an appropriate mechanism to ensure local implementation of those measures that are not under direct state control. The state's wide-ranging enforcement authority to protect against actual and potential pollution of the state's waters will be utilized in those instances where municipal or other state agency implementation of management measures is lacking.

To improve and enhance municipal implementation of the §6217 management measures, CT DEP will continue an ambitious outreach program for municipal planning and zoning and engineering/public works officials. The outreach program will focus first in the coastal municipalities, especially those located within high-priority watersheds, and gradually moving inland throughout the §6217 management area, again, targeting the same high-priority watersheds. This outreach effort will be coordinated with other appropriate entities including the soil and water conservation districts, the University of Connecticut Cooperative Extension System's NEMO Program, and nonprofit environmental groups and watershed associations.

IV. GETTING MEASURABLE ENVIRONMENTAL RESULTS

Relatively speaking, one could argue that the NPS Program has been successful because, despite population growth and associated new development, water quality in the state has continued to improve. For example, reduced total suspend solids (TSS) and nitrogen concentrations in rivers and streams can be linked to more effective and consistent enforcement of the Soil Erosion and Sediment Control Act, and more recently, implementation of the Stormwater General Permit Program. However, the diffuse nature of nonpoint source pollution makes it difficult to determine whether specific programs or BMPs are responsible for these improvements.

Another approach taken by CT DEP has been to measure the pollutant removal effectiveness of BMPs, either through monitoring or existing data, promote the use of the most effective BMP's on a widespread scale, and assume improvements in water quality will follow. For example, CT DEP has funded monitoring of several BMP's around the state, including four stormwater treatment systems, and a combined wet pond/wetland system at Lake Whitney in Hamden. While monitoring has not been completed yet on the stormwater systems, the Lake Whitney demonstration project was very successful at removing pollutants from an approximately 20-acre residential area. As a result, CT DEP is promoting the use of similar systems around the state and expects similar results.

Because nonpoint source pollution results from the actions of many individuals and from many activities, the state NPS program has emphasized education and outreach aimed at changing certain behaviors. For example, §319 funds have supported the University of Connecticut Cooperative Extension System's (UCONN/CES) Integrated Pest/Crop Management Program, which teaches agricultural producers, turf managers, and others to reduce their use of pesticides and fertilizer while maintaining productivity. This program has been successful in measuring actual reductions in the use of high risk pesticides and nutrients. The UCONN/CES Nonpoint Education for Municipal Officials (NEMO) program teaches local land use officials about the link between land use and water quality, and the importance of reducing impervious surfaces and using BMPs. Measuring changes in water quality resulting from this program is more difficult, however, because changes in how municipalities regulate new development may be very subtle and take time to effect any real improvements in water quality.

Several watershed projects have involved citizen monitoring programs, including the Sasco Brook and Scantic, and Mattabesset river projects. As part of the Mattabesset River project, erosion from a commercial development adjacent to the river was controlled with the application of several BMPs, measurably reducing sediment loads to the

river. In Sasco Brook, improved manure management practices at a large horse boarding facility have lead directly to reduced bacteria levels downstream from the facility.

Section 319 funds also have supported tidal wetland restoration, including sites at Hammonasset Beach State Park in Madison and White Sands Beach in Old Lyme. Overall, the CT DEP's Wetland Habitat and Mosquito Management (WHAMM) Unit, with assistance from OLISP, restored approximately 150 acres of tidal wetland in 1998, bringing the total restored to approximately 1,650 acres since the 1970s. Restoring wetlands improves water quality by providing a buffer between marine waters and upland developed areas, and provides important habitat for fish and wildlife.

Other ongoing state wide programs targeted in reducing nonpoint source worth mentioning are the car emission inspection, hazardous waste collection, and recycling - leaves and lawn cuttings programs.

V. ENVIRONMENTAL EXPECTATIONS FOR NPS PROGRAM

Successful implementation of the CT DEP NPS Management Program should result in the elimination of nonpoint source pollution and attainment of water quality standards and designated uses in waters currently impaired by nonpoint source pollution. As described in Section II, consistent and effective implementation and enforcement of federal, state, and local laws and regulations (e.g., Clean Water Act, Soil Erosion and Sediment Control Act, Connecticut Coastal Management Act, Inland Wetlands and Watercourses Act, Tidal Wetlands Act), should protect and restore important natural resources, and result in widespread application of BMPs to reduce and treat stormwater runoff. Section 319 funding above the FY98 level ("incremental" funds) will be utilized to develop and implement Watershed Restoration Action Strategies (WRAS) for those watersheds classified as Category 1 under the state's Unified Watershed Assessment. For FY99, CT DEP will utilize §319 funds to remove barriers to migratory fish passage in several high priority watersheds, including the Quinnipiac and Naugatuck rivers. While restoration of fish passage will open up miles of previously underutilized habitat and improve dissolved oxygen conditions, it may not be sufficient to remove their current Category 1 classification. CT DEP will continue monitoring and assessment activities to determine whether additional management actions are necessary to achieve full restoration. Restoration of these Category 1 and 303(d)-listed waters will allow CT DEP to focus more energy on preventing future nonpoint source pollution resulting from population growth and new development.

Appendix 1

Connecticut Nonpoint Source Assessment and Management Plan **(Not available on web site)**